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## Bioeconomy on track

BY HARIATI AZIZAN



Food of the future: Ducharne believes insects can be the solution to the world's food crisis.

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**Biotech projects spurring the country's bioeconomy are a game-changer for Malaysia to become a high-income developed nation.**

THE thought of eating creepy crawlies may give you the, er, creeps, but what if it can help you save the environment and reduce world hunger?

Entofood Sdn Bhd CEO Franck Ducharne assures that insects are the solution to the pressing food problem globally.

"We today have a permanent food crisis due to global warming and natural disasters affecting the production, supply and cost of food," he explains.

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“With more than seven billion people in the world, we already have difficulty providing food for everybody and we have a forecast of another two billion mouths to feed by 2016.”

At the same time, there is a growing demand for more protein sources like fish and meat from wealthier and growing economies including in South East Asia, which is putting pressure on the commodity sources and environment.

Enter insects, which Ducharme believes will help solve the world’s food crisis.

“Many may see insects as a hazard or pests but these fantastic animals can feed the world’s population. They are excellent sources of protein and essential nutrients. There is also a high biomass of insects – it is the largest population of animals on the planet,” he highlights, quoting the United Nations Food and Agricultural Organisation (FAO)’s recent call to embrace a “bug diet” as proof of their potential as the food of the future.

“Another thing many don’t realise is that insects are clean animals that can survive in the dirtiest natural environments. This gives them a strong capacity to handle bacteria,” he adds.

To study the feasibility of producing insects on a big scale for sustainable protein source, Ducharme and two business partners from France conducted research and development (R&D) in Madagascar for almost two years.

“Previously, biotech industries focused on algae and single cell (bacteria) to solve the crisis. We focused our research on insect biology with the target of developing the means and technology for a mass insect production.”

The success of their research prompted them to look for a suitable location for their pilot insect farm.

“We knew we wanted to raise a tropical species and to break into the Asian market. Malaysia provided the strategic geographical location with the perfect climate and environment,” says Ducharme.

The biggest attraction, he adds, is Malaysia’s strong push for biotechnology with its tax incentives and guarantees to attract investors into the country.

Taking advantage of these facilities, Entofood set up shop in Malaysia and wasted no time in applying for the BioNexus Status.

BioNexus Status is a recognition awarded by the Malaysian Government to qualified companies that participate in and undertake value-added biotechnology activities. The award is given via BiotechCorp, an agency under the Science, Technology and Innovation Ministry (MOSTI) responsible for executing the objectives of the National Biotechnology Policy (NBP). It identifies value propositions in both R&D and commerce and supports biotechnology ventures in Malaysia via financial assistance and developmental services.

“BiotechCorp has helped us deal with administration issues and find corporate partners to build a network,” Ducharme says.

“When you come from outside to a country where you don’t know anyone, having

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the support of a dedicated and knowledgeable team of people is a big asset.”

To develop their technology and conduct further research, Entofood is also actively hiring local specialists in the field.

“We have always believed in engaging the local work force, even if they don’t have the know-how or technology, as long as they are well-educated and willing to grow with us. At the moment, we have a local entomologist and biologist on our staff.”

Currently, Entofood is operating a small pilot farm in Kuang, Selangor to breed their insects.

“It is a small scale operation to try out our technology,” says Ducharne, who is confident they are on schedule for their commercial operation.

Best of all, he says, Entofood has found two interesting by-products from their pilot project: a possible solution to our land fill issues and an organic fertiliser.

“A challenge we encountered when we started out was how to feed our insects. We did not want to plant specific plants as it would take up land that can be used for other things and will not be sustainable. The other option is to feed them recycled organic waste, or food waste,” he says.

As another FAO study showed, one third of the food produced worldwide is wasted. In Malaysia, for example, we reportedly generate some 15,000 tonnes of food and kitchen waste daily.

Entofood decided to tap into this ready resource and contacted big food operations such as universities, restaurants and supermarkets to get food waste. “We realise that this technology can also solve the problem of landfills, one of the main producers of greenhouse gas. It can be a waste management solution in future, especially if we can get the people to separate their waste at home...”

Another discovery from their insect farm, insect “manure”, is proving to be a good organic fertiliser.

Nevertheless, the main focus remains their insect breeding for protein production, and they hope to start the construction of their commercial operation next year.

And if you are still not convinced to take a bite, be assured that the bug food does not come straight from the farm to your plate.

“To transform them into raw food material, we put them through a thorough cleaning and drying process that destroys all the bacteria. The insects are clean and tests show they are free of any harmful bacteria including common food bacteria like salmonella and e-coli,” assures Ducharne.

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